# UNITED STATES PATENT AND TRADEMARK OFFICE

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| 09/752,501 | 12/29/2000 | Kireeti Kompella | Juniper-4 (JNP-0026) | 9488 |

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| EXAMINER |
|---|
| JONES, PRENELL P |

| ART UNIT | PAPER NUMBER |
|---|---|
| 2668 | |

DATE MAILED: 11/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

*-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --*

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1)☒ Responsive to communication(s) filed on <u>20 July 2005</u>.

2a)☐ This action is **FINAL**.     2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4)☒ Claim(s) *2-41,53-55,57,60,61,63 and 70-78* is/are pending in the application.

    4a) Of the above claim(s) __ is/are withdrawn from consideration.

5)☒ Claim(s) *18,19,36,40,41,70 and 72* is/are allowed.

6)☒ Claim(s) *2-39,53-55,57,63,71 and 73-78* is/are rejected.

7)☐ Claim(s) *60 and 61* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

**Application Papers**

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

### *Response to Arguments*

1.      Applicant's arguments with respect to claims 2-41,53-55, 57, 60, 61, 63 and 70-78 have

been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 101*

2.      35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or
> composition of matter, or any new and useful improvement thereof, may obtain a patent
> therefor, subject to the conditions and requirements of this title.

        Claims 34 and 35 are rejected under 35 U.S.C. 101 because the claimed invention is

directed to non-statutory subject matter.  The claim reads as "printed matter," such as a "piece

of paper."  Claim 35 depends on claim 34; therefore, claim 34 is rejected for the same reasons

that claim 35 is rejected.

See MPEP  § 2105 for patentability of microorganisms and MPEP  § 2106 - § 2106.02

for patentability of mathematical algorithms or computer programs.

Decisions have determined the limits of the statutory classes. Examples of subject matter is

Printed Matter:

        For example, a mere arrangement of printed matter, though seemingly a "manufacture,"

is rejected as not being within the statutory classes. See In re Miller, 418 F.2d 1392, 164 USPQ

46 (CCPA 1969); Ex parte Gwinn, 112 USPQ 439 (Bd. App. 1955); and In re Jones, 373 F.2d

1007, 153 USPQ 77 (CCPA 1967.)

## *Claim Rejections - 35 USC § 103*

1.      The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or
> described as set forth in section 102 of this title, if the differences between the subject
> matter sought to be patented and the prior art are such that the subject matter as a
> whole would have been obvious at the time the invention was made to a person having
> ordinary skill in the art to which said subject matter pertains.  Patentability shall not be
> negatived by the manner in which the invention was made.

2.      Claims 2-17, 20-28, 37-39, 63, 71 and 73-78 are rejected under 35 U.S.C. 103(a) as

being unpatentable over Cao et al in view of Stacey et al and Byrnes.


Regarding claims 2-17, 37-39, 63, 71 and 73-78, Cao discloses (Abstract, Fig. 1, col. 5, line 10

thru col. 7, line 67, a communication system that employs explicit routing protocols between a

plurality of LSR (label switched router), explicit routing is a subset of constraint-based routing,

whereby explicit route is represented in a label-request message as a list or group of nodes,

node selected from group of nodes, constraint-based route is encoded as a series of ER-hops,

each node along the path attempts to determine a loop-free path (partial path), (col. 6, line 4

thru col. 7, line 67) "next" router attempt to fulfill constraints if selected node fails,  nodes/LSR

determines if it is adjacent to abstract node, if a node is not part of the abstract node (a node to

which constraint process is delegated) described by a first ER-hop an error message is returned

indicating "Bad initial ER-hop and Bad explicit routing TLV" error, router establish a plurality of

partially distinct paths, ER-hops are loose hops, if next node is a strict ER-hop, then there is an

error and it is represented by a "Bad strict node" error, (col. 8, line 20 thru col. 10, line 41) path

parameters include peak rate, committed rate, service granularity, peak rate defines bandwidth,

delay variations, area border/boundary router gateway, communication of "downstream lost"

status message and "upstream lost" status message in detection of broken path. However, Cao

is silent on autonomous system and message including a path determination constraint

expressed as an executable instruction. In analogous art, Stacey discloses a communication

network that supports constraints associated with COPS (common open policy service), wherein

the COPS messages are pushed to LSRs where they are used to invoke/execute RSVP

message, constraint based routed label switched paths between plurality groups of service

nodes via abstract nodes (col. 4, line 15-46), autonomous systems, QoS declared as an

constraint with requirements that are associated with the COPS command messages and RSVP

messages (col. 5, line 45 thru col. 6, line 37, col. 9, line 20-28), and Byrnes discloses controlling

a communication system wherein the architecture contains a plurality of LSRs/nodes and

Automatic traffic control computer (ATCC) which utilizes constraints such as QoS, bandwidth

and queue monitoring and associated variables as response time, throughput and delay/jitter to

generate paths that route traffic in conjunction with (paragraph 0013-0018), ATCC utilizes

received messages that include constraints to control and operate network via computer

executable instructions (0026-0029, 0035-0038, 0045-0052, 0057, 0065), and ATCC sends

messages and NNI messages to establish or modify paths with respect to the execution of

constraint instructions, and further constrains include queue type, (0070-0075). Therefore, it

would have been obvious to one of ordinary skill in the art at the time of the invention to be

motivated to implement the combined teachings of Stacey and Byrnes who teach executing

instructions with respect to constraints associated in a message/request with the teachings of

Cao for the purpose of further managing, controlling and operating the communication among

nodes in a LSR environment as to reduce congestion.

Regarding claims 20-28, as indicated above, Cao discloses (Abstract, Fig. 1, col. 5, line 10 thru

col. 7, line 67, a communication system that employs explicit routing protocols between a

plurality of LSR (label switched router), explicit routing is a subset of constraint-based routing,

whereby explicit route is represented in a label-request message as a list or group of nodes,

node selected from group of nodes, constraint-based route is encoded as a series of ER-hops,

each node along the path attempts to determine a loop-free path (partial path), (col. 6, line 4

thru col. 7, line 67) "next" router attempt to fulfill constraints if selected node fails, nodes/LSR

determines if it is adjacent to abstract node, if a node is not part of the abstract node (a node to

which constraint process is delegated) described by a first ER-hop an error message is returned

indicating "Bad initial ER-hop and Bad explicit routing TLV" error, router establish a plurality of

partially distinct paths, ER-hops are loose hops, if next node is a strict ER-hop, then there is an

error and it is represented by a "Bad strict node" error, (col. 8, line 20 thru col. 10, line 41) path

parameters include peak rate, committed rate, service granularity, peak rate defines bandwidth,

delay variations, area border/boundary router gateway, communication of "downstream lost"

status message and "upstream lost" status message in detection of broken path. Cao further

discloses (col. 11, line 15-40) that the methods achieved can be implemented using appropriate

processor instructions used in combination with software and hardware logic.


2.      Claims 29, 30, 31, 33-35 and 57 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Goguen et al in view of Chernoff et al.


Regarding claims 29, 30, 31, 33-35 and 57, Goguen discloses an MPLS system that determines

the path in the design of traffic flow in a traffic engineering environment, wherein the

architecture includes nodes communicating between each other, constraint-based routing,

constraint-based calculations are utilized in request messages, MPLS commands utilized,

bandwidth assigned based on predefined constraints and implemented via algorithms

(executable code) based predefined traffic constraints as associated with request/messages,

explicit paths/nodes (col. 3, line 48 thru col. 4, line 7) utilizing registers for storage (col. 5, line

12-40, col. 7, line 36 thru col. 8, line 51, col. 9, line 1-25). However, Goguen is silent on

attribute registers and operand pointers pointing to attribute registers. In a communication

system that implements path determination via condition codes, Chernoff discloses

communication between communication devices whereby condition codes (executable

instructions) are utilized in a communication architecture that includes multiple registers used for

storage of codes/instructions, (col. 16, line 40-65, col. 25, line 55-59), path determination as

associated with executable code/instructions, pointers establishing connections between

registers and plurality operands (first, second and third operand) (col. 63, line 1-18, col. 64, line

15-46), general purpose register reads and/or writes (Fig. 13, col. 20, line 37, col. 65, line 30-

47), optimization execution depending on constraints (col. 60, line 50-62), second operand

pointer points to parameter register, read only register (state container/parameter register) is

utilized (col. 64, 16-45, col. 67, 6-10), server process via a path to determine from the server

process whether there is a image corresponding to the routine of the application program

wherein an execution has just been requested by a user (col. 9, line 61-65). Therefore, it would

have been obvious to one of ordinary skill in the art at the time of the invention to be motivated

to implement utilizing attribute registers in conjunction with operands pointers as taught by

Chernoff with the teachings of Goguen for the purpose of further managing the conditional code

and results as associated with determining paths in a traffic communication system.

3.    Claims 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goguen et al

in view of Chernoff et as applied to claim 29 and 31 above, and further in view of Cao et al.

Regarding claim 32, as indicated above, Goguen and Chernoff disclose determining path in a

communication system that utilizes constraint instruction as associated with request messaging.

Both Goguen and Chernoff are silent on explicit node being either loose-hop or a strict-hope

node. However, in a communication system that performs path determination Cao discloses

(Abstract, Fig. 1, col. 5, line 10 thru col. 7, line 67, a communication system that employs explicit

routing protocols between a plurality of LSR (label switched router), explicit routing is a subset

of constraint-based routing, whereby explicit route is represented in a label-request message as

a list or group of nodes, node selected from group of nodes, constraint-based route is encoded

as a series of ER-hops which are loose hops, strict ER-hop, representation by a "Bad strict

node." Therefore, it would have been obvious to one of ordinary skill in the art at the time of the

invention to be motivated to implement utilizing either a loose-hop node or strict-hop node as

taught by Cao with the combined teachings of Goguen and Chernoff for the purpose of further

establishing a path for traffic.

### *Allowable Subject Matter*

1.    Claims 18, 19, 36, 40, 41, 70 and 72 are allowed over prior art.

2.    Claims 60 and 61 objected to as being dependent upon a rejected base claim, but would

be allowable if rewritten in independent form including all of the limitations of the base claim and

any intervening claims.

3.      The following is a statement of reasons for the indication of allowable subject matter:
Although the prior art discloses a communication system path determination by utilizing system
constraints, they fail to teach or suggest to determine whether the node is a tail-end, head-end
or intermediate node, if it is determined that the node is a tail-end node, and at least one
network path determination constraint has been satisfied, then signaling back to an upstream
node of that path that the path is O.K., determining whether a strict-hop node is specified as a
next node of an explicit path constraint, a loose-hop node is specified as a next node of an
explicit path constraint or no node is specified as an explicit path constraint, if a strict-hop node
is specified as a next node of an explicit path constraint, then applying each of the at least one
network path determination constraint to an appropriate one of a link between the node and the
strict-hop node, and the partial path defined, determine whether to delegate constraint
processing to another device and if it has been determined that constraint processing has been
delegated to another network element, forwarding the message carrying the at least one
network path determination constraint to the other device, a table including a second entry
representing an accumulated value for a second attribute of a node connected to the nod and a
third entry storing a result of a specified operation performed on one of the first entry and the
second entry.


        Any inquiry concerning this communication or earlier communications from the examiner
should be directed to Prenell P. Jones whose telephone number is 571-272-3180. The
examiner can normally be reached on 9:00-5:30.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's
supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the
organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

may be obtained from either Private PAIR or Public PAIR. Status information for unpublished

applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private

PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Prenell P. Jones

October 20, 2005


CHIEH M. FAN
PRIMARY EXAMINER